

BRADLEY FIGHTING VEHICLE SYSTEM-A3 (BFVS-A3)



Army ACAT IC Program

Total Number of Systems:	1,109
Total Program Cost (TY\$):	\$4383M
Average Unit Cost (TY\$):	\$3.952M
Full-rate production:	2QFY01

Prime Contractor

United Defense, Limited Partnership

SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2020

The M2A3 and M3A3 Bradley Fighting Vehicle System (BFVS) are improved versions of the M2A2 and M3A2 BFVS. The BFVS-A3 includes enhancements intended to improve lethality, mobility, survivability, and sustainability. Additionally, these enhancements are intended to provide increased situational awareness and digital command and control capabilities necessary to provide **information superiority** to the **dominant maneuver** force. The Bradley Fighting Vehicle and the Abrams Tank are the two central components of the dominant maneuver digital force.

The mission of the BFVS is to provide mobile protected transport of an infantry squad to critical points on the battlefield and to perform cavalry scout missions. The BFVS will also provide overwatching fires to support dismounted infantry and suppress or defeat enemy tanks and other fighting vehicles. BFVS-A3 enhancements include:

- Incorporation of Force XXI Battle Command, Brigade and Below (FBCB2) Integrated Combat Command and Control (IC³) to share digital battle command information and situational awareness with all components of the combined arms team.
- The improved Bradley acquisition system and commander's independent viewer, both 2nd generation Forward Looking Infrareds (FLIR), to improve target acquisition and target engagement. A position navigation system with a Global Positioning System receiver and a backup inertial navigation system to enhance situational awareness.
- Integrated maintenance diagnostics and Built-In-Test/Built-In-Test Equipment.

BACKGROUND INFORMATION

In March 1994, the Army awarded a contract to United Defense to begin the EMD phase. Operational testing conducted prior to FY00 has included LUT I in December 1997; an Operational Experiment (OE) in September 1998; a Detection, Acquisition, Recognition, Identification (DARI) test in October 1998; and LUT II in August-September 1999.

The DARI test involved a side-by-side comparison between the BFVS-A3 equipped with 2nd generation FLIR and the baseline BFVS-A2 equipped with a 1st generation FLIR. The results of the DARI demonstrated a significantly improved capability of the BFVS-A3 over the baseline BFVS-A2 to detect, recognize, and identify targets at operationally relevant ranges. The focus of LUT II was to assess whether the BFVS-A3 possesses an increased capability over the BFVS-A2 ODS to acquire, engage, and hit targets. The results of LUT II demonstrated that the BFVS-A3 does possess an improved capability over the baseline to acquire, engage, and hit targets.

The first phase of the BFVS-A3 Live Fire Test and Evaluation, the Controlled Damage Test, was completed in FY99. This effort used non-destructive test methods to insert potential damage mechanisms, such as electrical shorts, into the system. Eighteen of 19 full-up, system-level live fire shots, across a variety of threat classes, were successfully completed in FY99.

TEST & EVALUATION ACTIVITY

No OT was conducted in FY00. The BFVS-A3 IOT&E is scheduled to be conducted in October-November 2000.

Most of the testing in FY00 has been devoted to ensuring the BFVS-A3 will be ready for IOT&E. Last year, the program modified its technical approach to integrating digital C². Much of the technical testing has focused on ensuring the successful integration of this new approach, called Integrated Combat Command and Control (IC³). Software and C² performance testing was conducted in May-June 2000 on the BFVS-A3 with IC³. In addition, digital communications connectivity between the BFVS-A3 and M1A2 SEP was tested at the same time. Results of this testing were positive. Required digital messages were successfully transmitted between the two platforms and the BFVS-A3's IC³ demonstrated sufficient maturity to proceed to IOT&E.

A diagnostics demonstration was conducted during April-June 2000. The purpose of this event was to demonstrate fixes to previously identified shortfalls in both the on-board Vehicle Diagnostics and

Maintenance System as well as the off-board organizational and direct support diagnostics equipment. The results of this event were positive, demonstrating adequate diagnostics performance and sufficient technical maturity to proceed to IOT&E.

The Director approved the BFVS-A3 TEMP, Revision 5, in June 2000. This update incorporated changes resulting from the program's new technical approach to digital C², IC³.

DOT&E's independent evaluation of LFT results continued in FY00. The Army conducted two exploratory shots using "new threat" Rocket Propelled Grenades (RPG) against a Bradley ballistic hull and turret in 4QFY99, along with three additional shots against range targets in March 2000. The results of these tests will be used to determine if the nineteenth, and final, full-up system LFT shot is required.

TEST & EVALUATION ASSESSMENT

The integration of IC³ has remained the primary technical challenge to the program. IC³ is designed to meet a key system requirement for digital battle command and is the BFVS-A3's link to FBCB2. A full evaluation of the BFVS-A3 requires that the system include functional, production-representative IC³. As of this writing, technical testing conducted on the BFVS-A3 indicate that the system's IC³ is sufficiently mature to enter IOT&E and successfully demonstrate system digital C² requirements.

As noted above, the DARI test was successful and clearly established the superiority of the BFVS-A3 2nd generation FLIR's target acquisition capability in comparison to the currently fielded system.

The full implementation of system maintenance diagnostics, both the on-board Vehicle Diagnostics and Maintenance System as well as off-board maintenance diagnostics equipment, has demonstrated sufficient technical maturity in developmental testing to enter IOT&E.

The BFVS-A3 IOT&E, to be conducted October-November 2000, will consist of 16 force-on-force battles between a BFVS-A3/M1A2 SEP equipped company team and a baseline company team consisting of BFVS-A2's and M1A2's. This event, in which 14 BFVS-A3's will participate, is intended to evaluate the overall operational effectiveness and suitability of the BFVS-A3. Results of the IOT&E are not anticipated before January 2001. The IOT&E will be conducted with only the FBCB2 component of the Army Battle Command System (ABCS). BFVS-A3 equipped units are scheduled to participate in future FBCB2 OT events, allowing for the opportunity for the BFVS-A3 to demonstrate full interoperability with the remaining components of ABCS.

Results to date from live fire testing have demonstrated a number of survivability improvements over the baseline system and have suggested possible areas for improving vehicle survivability. Test results have also demonstrated the value of Explosive Reactive Armor (ERA) and have led to further T&E activity in that area.

